



Nutrient Management

Conservation Practice Job Sheet

590

Natural Resources Conservation Service (NRCS)

March 1999

Landowner _____



Definition

Nutrient management is managing the source, rate, form, timing, and placement of nutrients.

Purpose

Nutrient management effectively and efficiently uses scarce nutrient resources to adequately supply soils and plants to produce food, forage, fiber, and cover while minimizing environmental degradation.

Where Used

Nutrient management is applicable to all lands where plant nutrients and soil amendments are applied.

Conservation Management Systems

Nutrient management may be a component of a conservation management system. It is used in conjunction with Crop Rotation, Residue Management, Pest Management, conservation buffer practices, and/or other practices needed on a site-specific basis to address natural resource concerns and the landowner's objectives. The major role of nutrient management is to minimize nutrient losses from fields, thus helping protect surface and ground water supplies.

Nutrient Management Planning

Nutrient management components of the conservation plan will include the following information:

- field map and soil map
- crop rotation or sequence
- results of soil, water, plant, and organic material samples analyses
- expected yield
- sources of nutrients to be applied
- nutrient budget, including credits of nutrients available
- recommended nutrient rates, form, timing, and method of application
- location of designated sensitive areas
- guidelines for operation and maintenance

Nutrient management is most effective when used with other agronomic practices, such as cover and green manure crops, residue management, conservation buffers, water management, pest management, and crop rotation.



General Nutrient Management Considerations

- Test soil, plants, water and organic material for nutrient content.
- Set realistic yield goals.
- Apply nutrients according to soil test recommendations.
- Account for nutrient credits from all sources.
- Consider effects of drought or excess moisture on quantities of available nutrients.
- Use a water budget to guide timing of nutrient applications.
- Use cover and green manure crops where possible to recover and retain residual nitrogen and other nutrients between cropping periods.
- Use split applications of nitrogen fertilizer for greater nutrient efficiency.

Guidelines for Operation and Maintenance

- Review nutrient management component of the conservation plan annually and make adjustments when needed.
- Calibrate application equipment to ensure uniform distribution and accurate application rates.
- Protect nutrient storage areas from weather to minimize runoff and leakage.
- Avoid unnecessary exposure to fertilizer and organic waste, and wear protective clothing when necessary.
- Observe setbacks required for nutrient applications adjacent to waterbodies, drainageways, and other sensitive areas.
- Maintain records of nutrient application as required by state and local regulations.
- Clean up residual material from equipment and dispose of properly.

Nutrient Management Assessment

Make a site-specific environmental assessment of the potential risk of nutrient management. The boundary of the nutrient management assessment is the agricultural management zone (AMZ), which is defined as the edge of field, bottom of root zone, and top of crop canopy. Environmental risk is difficult to assess beyond the AMZ.

Within an area designated as having impaired or protected natural resources (soil, water, air, plants, and animals), the nutrient management plan should include an assessment of the potential risk for nitrogen and phosphorus to contribute to water quality impairment.

The Leaching Index (LI), Nitrogen Leaching and Economic Analysis Package (NLEAP), the Phosphorus Index (PI), erosion prediction models, water quality monitoring, or any other acceptable assessment tools may be used to make risk assessments.

Evaluate other areas that might have high levels of nutrients, produced or applied, that may contribute to environmental degradation. For example, areas with high livestock concentrations or large areas of high-intensity cropping, such as continuous potatoes, corn, or specialty crops, may be contributing heavy nutrient loads to surface or ground water.

Conservation practices and management techniques will be implemented with nutrient management to mitigate any unacceptable risks.

Nutrient Management – Specifications Sheet

Landowner _____ Field number _____

Purpose (check all that apply)	
<input type="checkbox"/> Budget and supply nutrients for plant production	<input type="checkbox"/> Utilize manure/organic material as a nutrient source
<input type="checkbox"/> Minimize agricultural nonpoint source pollution (water quality)	<input type="checkbox"/> Maintain or improve soil condition

Table 1 Field Conditions and Recommendations					
Crop sequence/rotation (circle current crop)					Expected yield
Current soil test levels (ppm or lb/ac)					
N	P	K	pH	S.O.M. %	EC
Recommended nutrients/amendments to meet expected yield					
N	P ₂ O ₅	K ₂ O	Lime	Other	Other

Table 2 Nutrient Sources							
Credits		N		P ₂ O ₅		K ₂ O	
				Pounds per acre			
1. Nitrogen credits from previous legume crop							
2. Residual from long-term manure application							
3. Irrigation water							
4. Other (e.g., atmospheric deposition)							
5. Total credits							
Plant available nutrients applied to field		N		P ₂ O ₅		K ₂ O	
(Circle column that is landowner's decision)		Trial A	Trial B	Trial A	Trial B	Trial A	Trial B
6. Credits (from row 5, above)							
7. Fertilizer	Starter						
	Other						
8. Manure/organic material							
9. Subtotal (sum of lines 6, 7, and 8)							
10. Nutrients recommended (from table 1)							
11. Nutrient status (subtract line 10 from line 9)							
If line 11 is a negative number, this the amount of additional nutrients needed to meet the crop recommendation.							
If line 11 is a positive number, this is the amount by which the available nutrients exceed the crop requirements.							

[illegible]

Nutrient Management – Job Sketch

Draw or sketch the field, showing any sensitive areas and required setback zones. Inside each sketched field, enter total field acres and net application acres. Other relevant information, such as complementary practices or adjacent field or tract conditions may be included.

Scale 1"=_____ ft. (NA indicates sketch not to scale: grid size=1/2" by 1/2")

Perform the following operations and maintenance:

Review this nutrient management plan every _____ years.

Maintain field records for 5 years.

Calibrate application equipment to apply within \pm _____ % of the recommended rate.

Handle all nutrient material with caution. Wear appropriate protective clothing.

Clean up residual material from equipment and dispose of properly.

Additional specifications and notes:

[illegible]

The United States Department of Agriculture (USDA) prohibits discrimination in its programs on the basis of race, color, national origin, sex, religion, age, disability, political beliefs and marital or family status. (Not all prohibited bases apply to all programs.) Persons with disabilities who require alternative means for communication program information (Braille, large print, audiotope, etc.) should contact the USDA Target Center (202) 720-2600 (voice and TDD).

To file a complaint, write the Secretary of Agriculture, U.S. Department of Agriculture, Washington, D.C., 20250, or call 1-800-245-6340 (voice) or (202) 720-1127 (TDD). USDA is an equal opportunity employer.